REMARKS

Reconsideration and allowance of this application are respectfully requested in light of the above amendments and the following remarks.

Claims 1, 11 and 14 have been amended for clarity; and claims 2, 3 and 4 have been amended to correct a typographical error by deleting overlapped elements. Claims 6-10, 13, 15 have been canceled. Support for the amended claims is found at least in Figs. 1, 2, 4 and 12 and the specification at page 12, lines 17-20, page 14, lines 2 and 15 and page 28, lines 5-14. (References herein to the specification and drawings are for illustrative purposes only and are not intended to limit the scope of the invention to the referenced embodiments.)

No new matter is believed to be added by any of these amendments.

The objections to the claims are overcome by canceling claims 7 and 15, and amending claim 11 to move limitations, added in a previous amendment, to be included in the transmitter limitations.

Claims 1-4, 7-11 and 14-16 were rejected under 35 USC 103(a) as unpatentable over Sandberg et al. (US 5 715 280) in view of Xie et al. (A Combined DMT/DWMT System for DSL Application), further in view of Mandyam (US 6,940,828). Claims 6 and 13 were rejected under 35 USC 103(a) as unpatentable over Kjeldsen et al. (US 2003/231714) in view of Xie et al., further in view of Butash (US 6,351,451) Claim 12 was rejected under 35 USC 103(a) as unpatentable over Xie in view of Smart et al. (US 2002/0041637). To the extent that these rejections may be applied to the amended claims presented herein, the Applicants respectfully traverse based on the points set forth below.

As background to this invention, it is noted that during communications, there may occur amplitude distortion and phase distortion caused by a variation in impedance and multipath interference on a transmission path. Thus, it is convenient to be able to process both of the amplitude and phase parameters, that is, complex information. A related art DWMC (Digital Wavelet Multi Carrier) communications apparatus can process only amplitude information so that such apparatus cannot correct distortion depending on the condition of a transmission path, thus considerably suppressing the transmission efficiency.

An object of the present invention is to overcome these disadvantages by providing a multicarrier transmitter, multicarrier receiver and multicarrier communication apparatus, which enables processing complex information as communications data. The invention involves, *inter alia*, a first inverse wavelet transformer that includes a discrete cosine transformer for inputting the parallel data from said serial-to-parallel converter and for outputting the in-phase signal of complex information, and a second inverse wavelet transformer that includes a discrete sine transformer for inputting the parallel data from said serial-to-parallel converter and for outputting the orthogonal signal of complex information (see claims 1 and 14) or a first inverse wavelet transformer that includes a discrete cosine transformer for inputting the parallel data from said complex data generator and for outputting the in-phase signal of complex information, and a second inverse wavelet transformer that includes a discrete sine transformer for inputting the parallel data from said complex data generator and for outputting the orthogonal signal of complex information (see claim 11).

Regarding the rejection of claims 1, 11 and 14, the office action states at page 9, lines 7-18, page 10, line 21-page 11, line 11 and page 15, lines 1-3 that Madyam teaches of an OFDM

transmitter that discloses two separate transmitters, a discrete cosine transmitter and a discrete sine transmitter and discrete sine transmitter (#46-1 and #46-2, Fig. 3). The use of either a DST or DCT transform can be selected for an OFDM system (see col. 8, lines 55-61).

In summary, the OFDM system use either a DST or DCT transform, rather than using both DST and DCT transforms. That is, Madyam fails to disclose that the discrete cosine transformer outputs the in-phase signal of complex information, and the discrete sine transformer outputs the orthogonal signal of complex information.

Accordingly, Madyam lacks any disclosure of the present claimed subject matter of *inter alia*, a first inverse wavelet transformer that includes a discrete cosine transformer for inputting the parallel data from said serial-to-parallel converter and for outputting the in-phase signal of complex information, and a second inverse wavelet transformer that includes a discrete sine transformer for inputting the parallel data from said serial-to-parallel converter and for outputting the orthogonal signal of complex information (see claims 1 and 14) or a first inverse wavelet transformer that includes a discrete cosine transformer for inputting the parallel data from said complex data generator and for outputting the in-phase signal of complex information, and a second inverse wavelet transformer that includes a discrete sine transformer for inputting the parallel data from said complex data generator and for outputting the orthogonal signal of complex information (see claim 11).

Accordingly, it is submitted that the teachings of Sandberg, Xie, and Mandyam, considered alone or together, fail to anticipate or render obvious the subject matter of present independent claims 1, 11, and 14. Claims 2-4, 12, and 16 are considered to be allowable due to

their dependence from allowable independent claims and also due to their recitation of subject matter that provides an independent basis for their individual alowability.

Accordingly, it is submitted that this application is in condition for allowance, and a notice to that effect is respectfully solicited.

If any issues remain which may best be resolved through a telephone communication, the Examiner is requested to telephone the undersigned at the local Washington, D.C. telephone number listed below.

Respectfully submitted,

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